

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Withdrawn): An information processing apparatus comprising:

attribute input means for inputting attribute information for a 3D model;

attribute arrangement plane setting means for setting an attribute arrangement plane being a virtual plane with which said attribute information is associated;

storage means for storing said attribute information in association with said attribute arrangement plane;

frame setting means for setting a frame indicating existence of said attribute arrangement plane;

frame name setting means for placing a name of said attribute arrangement plane on said frame; and

arranging means for, when there exist a plurality of said attribute arrangement planes on the occasion of displaying said attribute information on display means, arranging names of said attribute arrangement planes so as to avoid overlap of the names on the display means.

Claim 2 (Withdrawn): The information processing apparatus according to Claim 1, wherein said arranging means enlarges or reduces each of areas of said plurality of frames, thereby arranging the names so as to avoid the overlap thereof.

Claim 3 (Withdrawn): The information processing apparatus according to Claim 1, wherein said arranging means defines as a reference an area of a frame displayed at a foremost position on the display means out of said plurality of attribute arrangement planes, and effects enlargement of the areas of said frames except for the frame of said reference according to an order along a direction from the front side toward the rear side on the display means.

Claim 4 (Withdrawn): The information processing apparatus according to Claim 3, wherein the areas of said frames are rectangular and wherein the enlargement of the areas of the frames for said attribute arrangement planes is to enlarge the areas of said plurality of frames into substantially similar shapes while placing a reference point at a vertex out of four vertexes of the frame as said reference and fixing vertexes of the respective frames corresponding to said reference point.

Claim 5 (Withdrawn): The information processing apparatus according to Claim 1, wherein said arranging means defines as an object for change of setting, every frame within a predetermined angular range with respect to a plane perpendicular to a visual axis direction of said display means.

Claim 6 (Withdrawn): The information processing apparatus according to Claim 5, wherein said predetermined angular range can be arbitrarily set by an operator.

Claim 7 (Withdrawn): The information processing apparatus according to Claim 1, wherein said arranging means defines as an object every frame set in parallel with a certain frame selected by an operator.

Claim 8 (Withdrawn): The information processing apparatus according to Claim 1, wherein said arranging means is executed in a state in which said 3D model is stationary.

Claim 9 (Withdrawn): The information processing apparatus according to Claim 1, wherein there exist a plurality of frames for said attribute arrangement planes and wherein when change of areas of said frames brings the areas of said frames to an exterior of said display means, a display magnification is changed so as to display the areas of all the frames as objects within said display means.

Claim 10 (Withdrawn): An information processing method comprising:

- an attribute input step of inputting attribute information for a 3D model;
- an attribute arrangement plane setting step of setting an attribute arrangement plane being a virtual plane with which said attribute information is associated;
- a storage step of storing said attribute information in association with said attribute arrangement plane;
- a frame setting step of setting a frame indicating existence of said attribute arrangement plane;
- a frame name setting step of placing a name of said attribute arrangement plane on said frame; and

an arranging step of, when there exist a plurality of said attribute arrangement planes on the occasion of displaying said attribute information on display means, arranging names of said attribute arrangement planes so as to avoid overlap of the names on the display means.

Claim 11 (Withdrawn): A computer executable program product comprising:

code for inputting attribute information for a 3D model;

code for setting an attribute arrangement plane being a virtual plane with which said attribute information is associated;

code for storing said attribute information in association with said attribute arrangement plane;

code for setting a frame indicating existence of said attribute arrangement plane;

code for placing a name of said attribute arrangement plane on said frame; and

code for, when there exist a plurality of said attribute arrangement planes on the occasion of displaying said attribute information on display means, arranging names of said attribute arrangement planes so as to avoid overlap of the names on the display means.

Claim 12 (Currently Amended): An information processing apparatus for displaying a 3D object comprising:

~~attribute input means for inputting attribute information for a 3D model;~~

~~attribute arrangement plane setting means for setting an attribute arrangement plane being a virtual plane with which said attribute information for a 3D model is associated;~~

~~storage means for storing said attribute information in association with said attribute arrangement plane; and~~

~~first frame setting means for setting a first frame so as to surround a range of the attribute information associated with said attribute arrangement plane; and~~

plane setting means for setting a plane in a 3D space, wherein the plane is indicated by a first frame, and characters of dimensions of the 3D object is placed on the plane;

second frame setting means for setting a second frame on the set plane so as to indicate the existence of the characters of the dimensions of a small part of the 3D object relative to the contour of the 3D object; and

display means for displaying the frame instead of the attribute information 3D object with the set plane, the set second frame, and the characters of the dimensions of a small part on the set plane in the same 3D space.

Claim 13 (Canceled)

Claim 14 (Currently Amended): An information processing method of an information processing apparatus for displaying a 3D object, comprising steps of:

~~an attribute input step of inputting attribute information for a 3D model;~~

~~an attribute arrangement plane setting step of setting an attribute arrangement plane being a virtual plane with which said attribute information for a 3D model is associated;~~

~~a storage step of storing said attribute information in association with said attribute arrangement plane; and~~

~~a first frame setting step of setting a first frame so as to surround a range of the attribute information associated with said attribute arrangement plane; and~~

~~a display step of displaying the frame instead of the attribute information~~

setting a plane, wherein the plane is indicated by a first frame and characters of dimensions of the 3D object is placed on the plane;

setting a second frame on the set plane so as to indicate the existence of the characters of the dimensions of a small part of the 3D object relative to the contour of the 3D object; and

displaying 3D object with the set plane, the set second frame and the characters of the dimensions of a small part on the set plane in the same 3D space.

Claim 15 (Currently Amended): A computer executable program product with a computer executable program tangibly embodied on a computer readable medium-product storage device, comprising:

~~code for inputting attribute information for a 3D model;~~

~~code for setting an attribute arrangement plane being a virtual plane with which said attribute information for a 3D model is associated;~~

~~code for storing said attribute information in association with said attribute arrangement plane; and~~

~~code for setting a first frame so as to surround a range of the attribute information associated with said attribute arrangement plane; and~~

~~code for displaying the frame instead of the attribute information~~

plane setting means for setting a plane in a 3D space, wherein the plane is indicated by a first frame, and characters of dimensions of the 3D object is placed on the plane;

second frame setting means for setting a second frame on the set plane so as to indicate the existence of the characters of the dimensions of a small part of the 3D object relative to the contour of the 3D object; and

display means for displaying 3D object with the set plane, the set second frame and the characters of the dimensions of a small part on the set plane in the same 3D space.

Claim 16 (Withdrawn): An information processing apparatus comprising:

visual axis setting means for defining an arbitrary visual axis direction and view point for a 3D model;

attribute input means for inputting attribute information corresponding to the visual axis direction set by said setting means;

storage means for storing said visual axis direction and said attribute information in association with each other;

specifying means for specifying said set visual axis direction;

display means for displaying the attribute information corresponding to the visual axis direction specified by said specifying means; and

display control means for switching a display method of an arbitrary range.

Claim 17 (Withdrawn): The information processing apparatus according to Claim 16, further comprising:

grouping means for grouping a plurality of attribute information inputted by said attribute input means; and

storage control means for storing the grouped attribute information and the visual axis direction set by said visual axis setting means, in association with each other in said storage means.

Claim 18 (Withdrawn): The information processing apparatus according to Claim 17, wherein said storage control means stores a plurality of different attribute information for an identical visual axis direction in association with each other.

Claim 19 (Withdrawn): The information processing apparatus according to Claim 18, wherein said visual axis setting means sets different positions on the identical visual axis direction and said storage control means stores attribute information at the different positions on the identical visual axis direction in association with each other.

Claim 20 (Withdrawn): The information processing apparatus according to Claim 16, wherein said display control means makes a shape of every area displayed in a different display method except for a shape of an area between the different positions on the identical visual axis direction, set by said visual axis setting means.

Claim 21 (Withdrawn): The information processing apparatus according to Claim 16, wherein said display control means makes every shape displayed in a different display method except for a shape to which the attribute information associated with said visual axis direction is added.

Claim 22 (Withdrawn): An information processing apparatus comprising:
visual axis setting means for defining an arbitrary visual axis direction and view point for a 3D model;

attribute input means for inputting attribute information corresponding to the visual axis direction set by said setting means;

storage means for storing said visual axis direction and said attribute information in association with each other;

specifying means for specifying said set visual axis direction;

display means for displaying the attribute information corresponding to the visual axis direction specified by said specifying means; and

cross section position display means for, when a position set by said visual axis setting means is located at a position indicating a cross section of the 3D model, explicitly showing said position.

Claim 23 (Withdrawn): The information processing apparatus according to Claim 22, further comprising:

grouping means for grouping a plurality of attribute information inputted by said attribute input means; and

storage control means for storing the grouped attribute information and the visual axis direction set by said visual axis setting means, in association with each other in said storage means.

Claim 24 (Withdrawn): The information processing apparatus according to Claim 23, wherein said storage control means stores a plurality of different attribute information for an identical visual axis direction in association with each other.

Claim 25 (Withdrawn): The information processing apparatus according to Claim 24, wherein said visual axis setting means sets different positions on the identical visual axis direction and said storage control means stores attribute information at the different positions on the identical visual axis direction in association with each other.

Claim 26 (Withdrawn): The information processing apparatus according to Claim 22, wherein said display control means makes a shape of every area displayed in a different display method except for a shape of an area between the different positions on the identical visual axis direction, set by said visual axis setting means.

Claim 27 (Withdrawn): The information processing apparatus according to Claim 22, wherein said display control means makes every shape displayed in a different display method except for a shape to which the attribute information associated with said visual axis direction is added.

Claim 28 (Withdrawn): An information processing apparatus comprising:
visual axis setting means for defining an arbitrary visual axis direction and view point for a 3D model;
attribute input means for inputting attribute information corresponding to the visual axis direction set by said setting means;
storage means for storing said visual axis direction and said attribute information in association with each other;
specifying means for specifying said set visual axis direction;

display means for displaying the attribute information corresponding to the visual axis direction specified by said specifying means; and

visual axis display means for, when a position set by said visual axis setting means is located at a position indicating a cross section of the 3D model, explicitly showing the visual axis direction.

Claim 29 (Withdrawn): The information processing apparatus according to Claim 28, further comprising:

grouping means for grouping a plurality of attribute information inputted by said attribute input means; and

storage control means for storing the grouped attribute information and the visual axis direction set by said visual axis setting means, in association with each other in said storage means.

Claim 30 (Withdrawn): The information processing apparatus according to Claim 29, wherein said storage control means stores a plurality of different attribute information for an identical visual axis direction in association with each other.

Claim 31 (Withdrawn): The information processing apparatus according to Claim 30, wherein said visual axis setting means sets different positions on the identical visual axis direction and said storage control means stores attribute information at the different positions on the identical visual axis direction in association with each other.

Claim 32 (Withdrawn): The information processing apparatus according to Claim 28, wherein said display control means makes a shape of every area displayed in a different display method except for a shape of an area between the different positions on the identical visual axis direction, set by said visual axis setting means.

Claim 33 (Withdrawn): The information processing apparatus according to Claim 28, wherein said display control means makes every shape displayed in a different display method except for a shape to which the attribute information associated with said visual axis direction is added.

Claim 34 (Withdrawn): An information processing method comprising:

- a three-dimensional data preparing step of preparing data of an article having a three-dimensional shape;
- a visual axis setting step of defining an arbitrary visual axis direction and view point for a 3D model;
- an attribute input step of inputting attribute information corresponding to the visual axis direction set in said setting step;
- a storage step of storing said visual axis direction and said attribute information in association with each other;
- a specifying step of specifying said set visual axis direction;
- a display step of displaying the attribute information corresponding to the visual axis direction specified in said specifying step; and
- a display control step of switching a display method of an arbitrary range.

Claim 35 (Withdrawn): An information processing method comprising:

a visual axis setting step of defining an arbitrary visual axis direction and view point for a 3D model;

an attribute input step of inputting attribute information corresponding to the visual axis direction set in said setting step;

a storage step of storing said visual axis direction and said attribute information in association with each other;

a specifying step of specifying said set visual axis direction;

a display step of displaying the attribute information corresponding to the visual axis direction specified in said specifying step; and

a cross section position display step of, when a position set in said visual axis setting step is located at a position indicating a cross section of the 3D model, explicitly showing said position.

Claim 36 (Withdrawn): An information processing method comprising:

a visual axis setting step of defining an arbitrary visual axis direction and view point for a 3D model;

an attribute input step of inputting attribute information corresponding to the visual axis direction set in said setting step;

a storage step of storing said visual axis direction and said attribute information in association with each other;

a specifying step of specifying said set visual axis direction;

a display step of displaying the attribute information corresponding to the visual axis direction specified in said specifying step; and

a visual axis display step of, when a position set in said visual axis setting step is located at a position indicating a cross section of the 3D model, explicitly showing the visual axis direction.

Claim 37 (Withdrawn): A computer executable program product comprising:

- code for preparing data of an article having a three-dimensional shape;
- code for defining an arbitrary visual axis direction and view point for a 3D model;
- code for inputting attribute information corresponding to the visual axis direction set in said setting step;
- code for storing said visual axis direction and said attribute information in association with each other;
- code for specifying said set visual axis direction;
- code for displaying the attribute information corresponding to the visual axis direction specified in said specifying step; and
- code for switching a display method of an arbitrary range.

Claim 38 (Withdrawn): A computer executable program product comprising:

- code for defining an arbitrary visual axis direction and view point for a 3D model;
- code for inputting attribute information corresponding to the visual axis direction set in said setting step;

code for storing said visual axis direction and said attribute information in association with each other;

code for specifying said set visual axis direction;

code for displaying the attribute information corresponding to the visual axis direction specified in said specifying step; and

code for, when a position set in said visual axis setting step is located at a position indicating a cross section of the 3D model, explicitly showing said position.

Claim 39 (Withdrawn): A computer executable program product comprising:

code for defining an arbitrary visual axis direction and view point for a 3D model;

code for inputting attribute information corresponding to the visual axis direction set in said setting step;

code for storing said visual axis direction and said attribute information in association with each other;

code for specifying said set visual axis direction;

code for displaying the attribute information corresponding to the visual axis direction specified in said specifying step; and

code for, when a position set in said visual axis setting step is located at a position indicating a cross section of the 3D model, explicitly showing the visual axis direction.

Claim 40 (Previously Presented): The information processing method according to Claim 14, wherein the attribute information in a magnified form is displayed in said display step in response to designating the frame.

Claim 41 (Previously Presented): The computer executable program product according to Claim 15, wherein the attribute information in a magnified form is displayed in response to designating the frame.